

HAROLD O. SEIGEL & ASSOCIATES, LIMITED

GEOPHYSICAL CONTRACT

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42A10NW0018 63.1453 CALVERT

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CABLE:
"SEIGEO", TORONTO

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**REPORT ON A
MAGNETIC AND ELECTROMAGNETIC SURVEY
IN CALVERT TOWNSHIP, ONTARIO
ON BEHALF OF
METAL MINES, LIMITED**

INTRODUCTION

During November, 1964, a combined magnetic and electromagnetic survey was carried out on a property covering part of concession VI, lots 6, 7, 8 and 9, Calvert Township, Ontario, comprising claim nos. L81827 to L81844 inclusive, on behalf of Metal Mines, Limited.

Traverse lines for the geophysical surveys were cut oriented $N44^{\circ}E$ (true). Magnetometer and electromagnetic observations were taken at 100' intervals, and at intermediate stations in disturbed areas.

Measurements of the vertical component of the earth's magnetic field were made with a Sharpe MF-1 fluxgate magnetometer. Appropriate corrections for diurnal variations were made by checking back periodically to base stations previously established.

The electromagnetic survey was carried out with the Turam method, using inductive energization. In this procedure the primary field is created by means of closed rectangular loops, and two receiving coils connected to a compensator bridge are used to measure the field strength

ratios and phase differences between consecutive stations. Subsurface conductors give rise to secondary electromagnetic fields, causing abnormal field strength ratios and phase differences. The relative amplitudes of field strength and phase distortions are a measure of the conductivity of the conducting bodies, i. e. good conductors are characterized by field strength distortion combined with relatively little phase shifting, whereas poor conductors affect the phase, rather than the strength of the resultant field.

For an accurate grading the resistivity/thickness (r/d) ratio of the individual conductors can be derived from the calculated in-phase and out-of-phase components. These values are marked on the upper right side of the anomalies. The depth to the current axis can be determined from the shape of the distortion and is marked on the lower left side. This depth should be regarded as the maximum depth to the upper surface of the conductor.

An operating frequency of 400 c. p. s. was used throughout the survey.

In all, 12.6 miles of profile were investigated.

GEOLOGY AND TOPOGRAPHY

Preliminary Geological Map No. P154 shows the geology of Calvert Township. Several outcrops of basic volcanics occur in the southwestern part of the investigation area. The remainder is covered

by clays. Scattered sulphide mineralization has been found in the outcrop area southeast of Nellie Lake, southwest of the property. The southwestern part of the property has some topographic relief. The remainder is a relatively flat, clay plain, deeply cut by the Abitibi River and subordinate streams.

DISCUSSION OF RESULTS

A. Magnetometer Survey

Plate 1 presents the magnetic observations in the form of a contour map on a scale of 1" = 400'. The results show several N-S striking narrow zones of higher magnetic intensity, probably representing gabbro or peridotite sills in the lavas. Depths calculated from the magnetic anomalies range from 0 in the southwest portion to 120' at 46+00S, 3+00W and 220' at 33+00S, 25+00E.

B. Turam Survey

Plate 2 presents the results of the Turam survey in the form of field strength ratio and phase difference profiles, on vertical scales of 1" = 40% and 1" = 20° respectively and a horizontal scale of 1" = 400'.

A power line crosses the property from SE to NW. In order to minimize interference from this source, the front loop sides were laid out parallel to and right underneath the transmission line. Thus, only a strip of ground 400' wide has been left uninvestigated.

Three conductor systems occur on the property, two of which

seem related to zones of magnetic relief, although there is no direct correlation. The conductors constituting zone "A" show poor conductivity ($r/d > 20$). The lack of magnetic correlation renders it unlikely that the conduction is due to serpentinization. The same applies to zone "B", although here the conductivity is somewhat better. Both zones appear to be of subordinate interest.

Zone "C" occurs in an area without appreciable magnetic relief. Two main parallel NS-SE directed conductors can be distinguished, although the curve forms in the NW portion of the zone suggest the possibility of a more complicated pattern than has been pictured. Conductivity of the main zones is good ($r/d \approx 5-8$ ohmcm/m). The conductor is open to the southeast.

CONCLUSIONS AND RECOMMENDATIONS

Conductor systems "A" and "B" do not show particularly favourable characteristics and are considered to be of subordinate interest. Zone "C" shows sufficiently high conductivity to be possibly due to sulphide mineralization.

As a first step toward examining this zone the following drill holes are recommended.

	<u>Collar</u>	<u>Orientation</u>	<u>Dip</u>	<u>Length</u>
D. D. H. #1	16+20W on line 44S	N136°W (along traverse)	60°	350'

D. D. H. #2

16+20W
on line 44S

N44°E
(along traverse)

60°

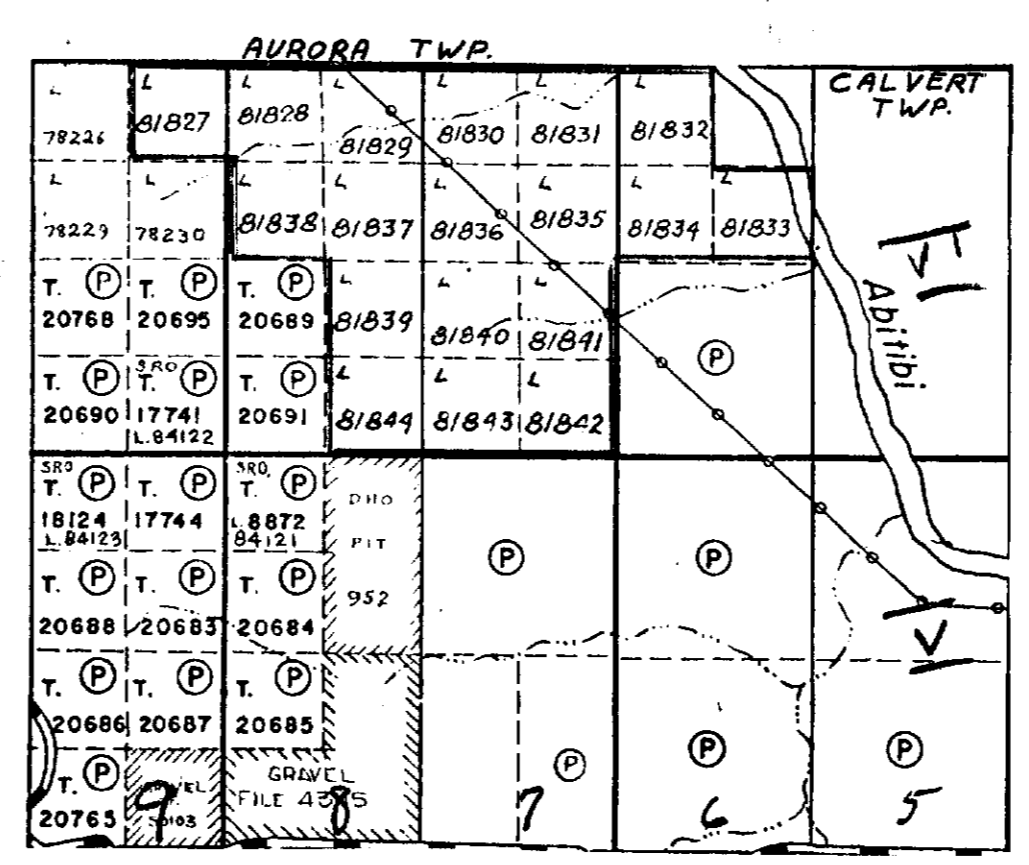
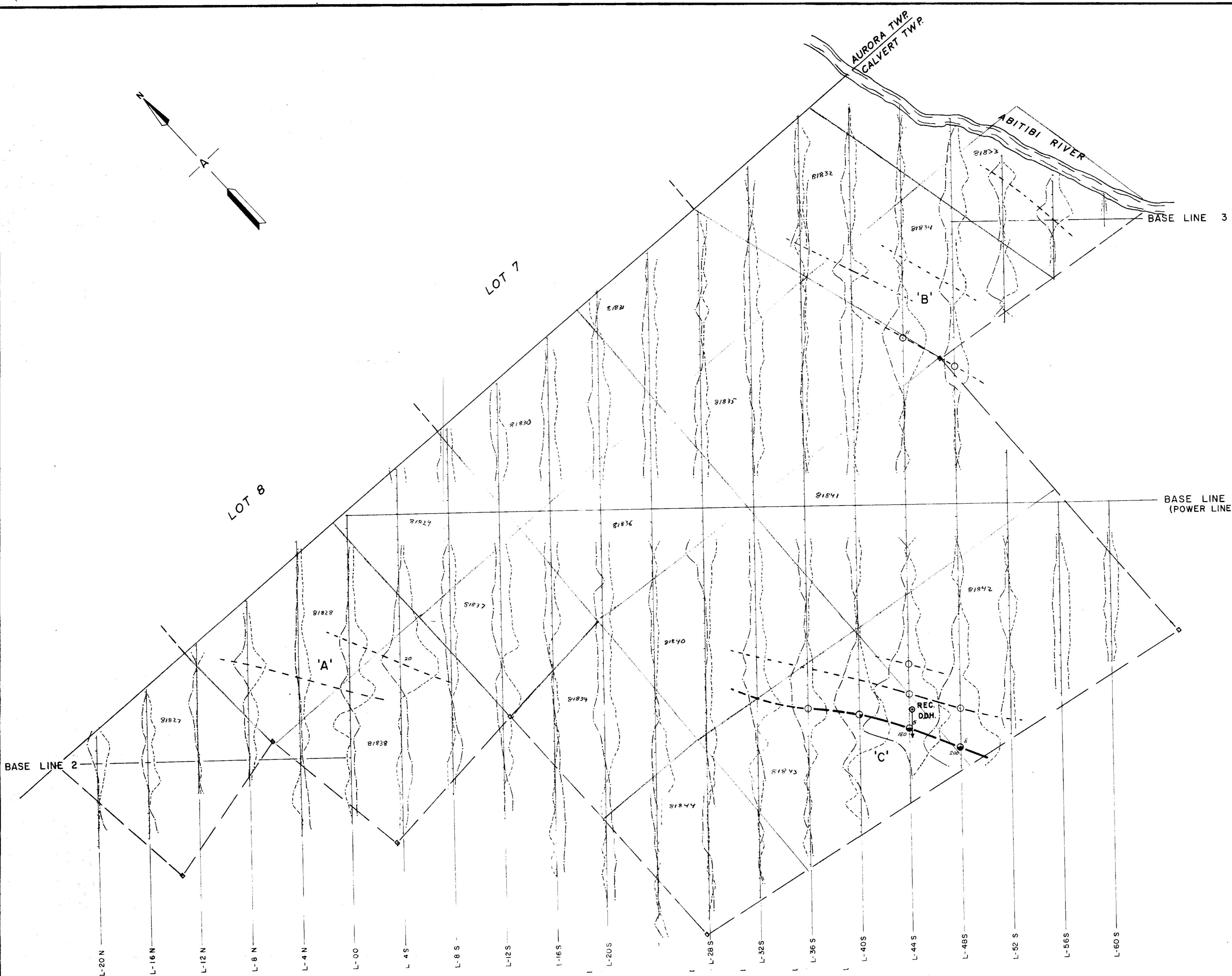
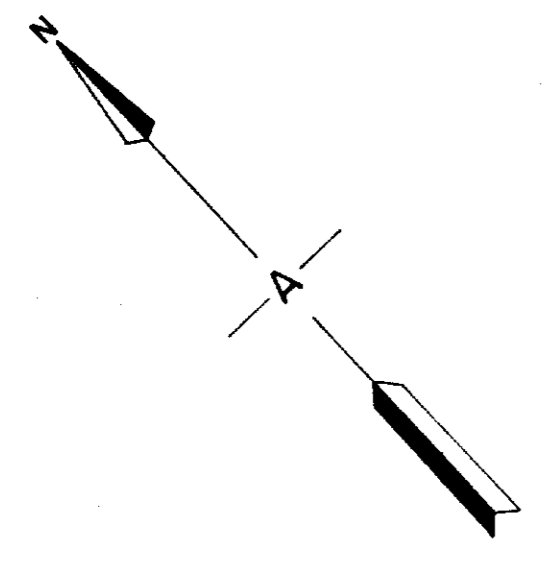
350'

Respectfully submitted,



Robbert A. Bosschart, Ph. D., P. Eng.

Toronto, Ontario.
December 11, 1964.



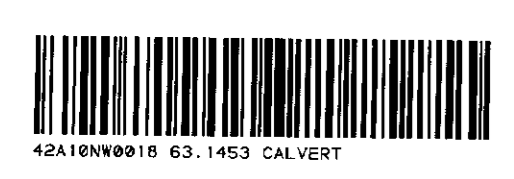
LEGEND

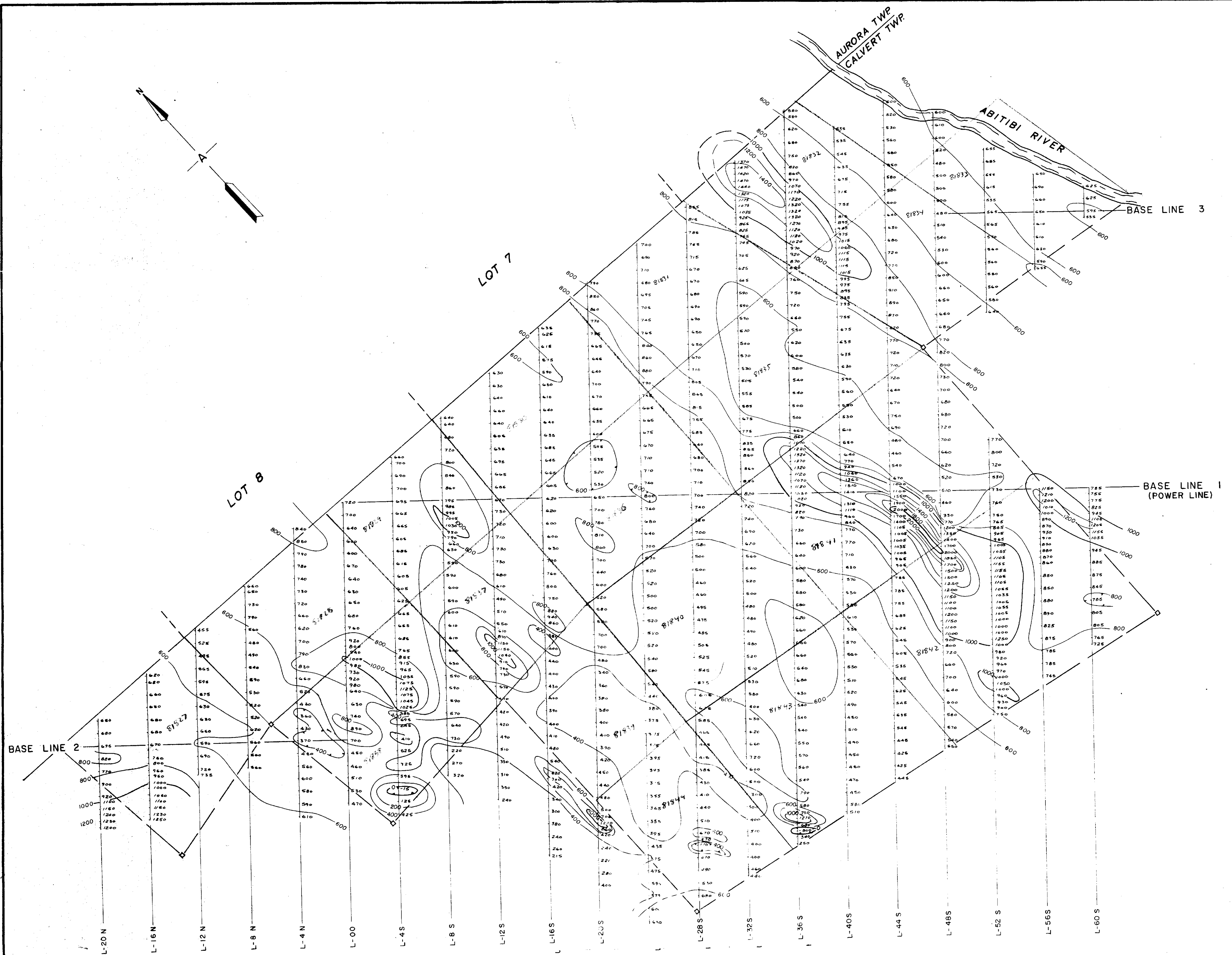
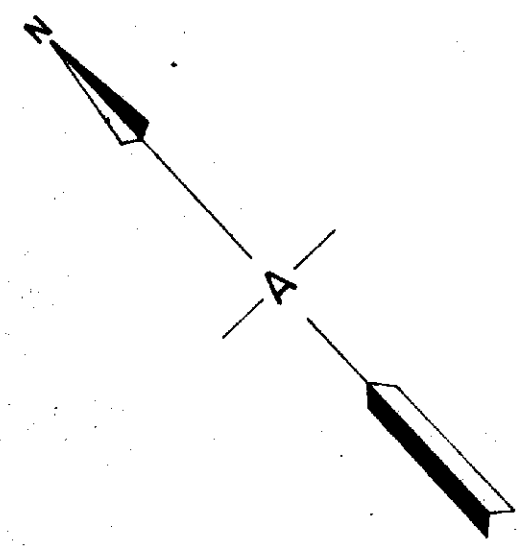
--- RATIO 140% --- 100% --- 60%

--- PHASE +20° --- 0° --- -20°

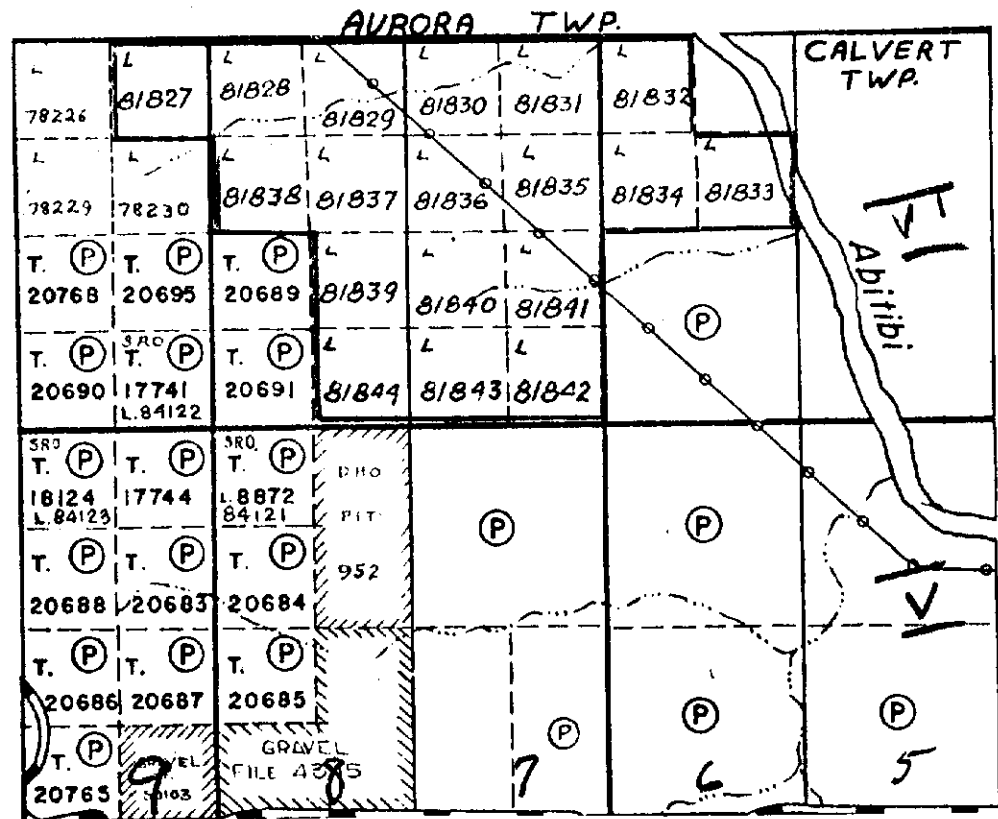
METAL MINES LIMITED
 CALVERT TWP IROQUOIS FALLS AREA, ONT.
TURAM ELECTROMAGNETIC SURVEY
 SCALE: 1" = 400'
 SURVEY BY HAROLD O. SEIGEL AND ASSOCIATES, LIMITED
 NOV. 1964

Harold O. Seigel





LEGEND
 600 VALUES IN GAMMAS
 CONTOUR INTERVAL 200 GAMMAS



KEY PLAN.

METAL MINES LIMITED
 CALVERT TWP IROQUOIS FALLS AREA, ONT.
MAGNETOMETER CONTOUR PLAN
 SCALE: 1" = 400'
 SURVEY BY HAROLD O. SEIGEL AND ASSOCIATES, LIMITED

NOV. 1964

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